

Chapter 26. Identifying Patients at Risk for Suicide: Brief Review (NEW)

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Introduction

Patients are often hospitalized after suicide attempts or because of suicidal ideation. However, hospitalization is not fully protective and the inpatient population remains at risk. Many risk factors are associated with inpatient suicide, but – as detailed below – reported rates vary widely, and the importance of this topic derives from the fatality of the outcome in close proximity to care, not primarily from its frequency. Suicide has been frequently associated with certain mental health diagnoses, especially depression and schizophrenia, but the risk of suicide is not limited to patients psychiatrically hospitalized: medical and surgical patients have profound risk factors, including severe pain, altered mental status, and progressive or terminal diagnoses. For all patients, these risks persist, even if patients are placed on special observation status with nursing personnel directly monitoring them.¹

Assessing and reducing the suicide risk for inpatients has become a component of national patient safety efforts. In 1998, The Joint Commission released a Sentinel Event Alert about inpatient suicides based on a review of 65 cases, making brief recommendations about suicide risk assessment, policy and procedures, staff training, and modification of the hospital to reduce environmental risks.² Although the 1998 Alert was not specific to behavioral health units, in 2010 the Joint Commission added a Sentinel Event Alert for inpatient suicide on medical/surgical units and in emergency departments.³ The current Joint Commission (2011) National Hospital Safety Goals include the goal of identifying patients at risk for suicide (NPSG.15.01.0), with three elements of performance (perform risk assessment, identify appropriate treatment environment and safety needs, and provide patient and their family with suicide prevention information at discharge).⁴ National Quality Forum's Serious Reportable Events (2011) lists suicide, suicide attempts, and "self-harm that results in serious injury."⁵ Medicare has placed inpatient suicide on the "never events" list. The Centers for Medicare and Medicaid Services (CMS) announced in August 2007 that Medicare would no longer pay for additional costs associated with many preventable errors, including those considered Never Events. Since then, many states and private insurers have adopted similar policies.⁶

The Agency for Healthcare Research and Quality's evidence report, "Making Health Care Safer: A Critical Analysis of Patient Safety Practices" (2001)⁷, focuses on general safety practices that would extend to psychiatry and other areas of medical practice, and on the relative lack of evidence for behavioral health interventions within the patient safety remit. Consequently, the authors did not specifically address inpatient suicide. The purpose of this narrative literature review is to identify new developments and trends starting from the date of the AHRQ report up to the present.

This review addresses three important questions related to the safety of medical, surgical, and psychiatric inpatients at risk for suicide.

- What is the evidence that clinical, organizational, or environmental programs work to reduce attempts or completions for hospitalized patients?
- What is the state of programs in use at this time?

- What has been learned from their implementation?

To conduct the review, we searched PubMed in October 2011 using major heading search terms Suicide, and Hospital or Inpatient or Safety Management, for English language articles published starting in the year 2000. We expanded the search using the PubMed “related citations” feature, and Google Scholar to search for citing articles of those retained for review; we identified additional relevant articles by reference mining. Clinical trials, large observational studies, reviews, and reports on implementations were given priority. Systematic reviews were scored for methodologic quality using the 11-point AMSTAR scale;⁸ items rated Not Applicable were not counted towards either the score or the total.

What Are the Practices for Reducing Inpatient Suicide?

Systematic reviews by Links⁹ (AMSTAR score 2/10) and Tishler¹⁰ (AMSTAR score 1/10), and informal reviews and expert opinions¹¹⁻¹⁴ have reached generally similar conclusions about programs to reduce suicide risk for inpatients, including: (1) Suicide risk assessment at admission, repeated especially during times of risk elevation such as personal crises, along with careful and consistent chart documentation of these assessments. (2) Treating psychiatric disorders that placed patients at risk, and addressing continuity and followup issues to maintain the patient in treatment after discharge. (3) Removing risk factors in the physical environment. (4) Staff training in risk assessment and communication. (5) Use of staff to observe high-risk patients, and (6) Defining hospital policies in these areas, including those for collecting statistics about suicide attempts and completions.

How Have These Practices Been Implemented?

Identifying Patients at Risk

Bowers et al¹⁵ (AMSTAR score 5/11) conducted a systematic review of 98 articles published in English, German, or Dutch since 1960 covering almost 15,000 inpatient suicides. Given the breadth of articles surveyed, they found a great diversity in suicide rates, trends, risk factors, and timing that reflected the national, cultural, social, and temporal variation. A personal history of suicidal behavior was very consistently associated with suicide completions. Schizophrenia and mood disorders (especially depression) were the leading psychiatric diagnoses. Mechanisms varied with availability; hanging was consistently reported. The mechanisms and rates were associated with location, because patients off-ward on a pass, or having eloped, are typically considered to still have inpatient status, regardless of the actual site of their suicide. Similar results were reported in articles by Kapur,¹⁶ Meehan,¹⁷ Hunt,¹⁸ Combs,¹⁹ (AMSTAR score 4/10). Hunt²⁰ reported an UK survey on suicides after absconding from the ward. Stewart²¹ reported on a retrospective analysis of medical records from hospitals in London and surrounding areas, finding that 10% of psychiatric inpatients made self-harm attempts, and 4% made suicide attempts. Pompili²² (AMSTAR score 3/10) reported a literature review on suicide in patients diagnosed with schizophrenia. Most of the reported deaths occurred while the patient was on leave, or having eloped from the hospital. Specific risk factors for suicides on hospital wards were not reported.

Ballard²³ reviewed 12 case series comprising 335 general hospital suicides (including patients off-ward on a pass), and found slightly different risk factors from those from inpatient psychiatry. The most common medical diagnoses were cancer, cardiovascular and pulmonary

disease. The mental status of patients was infrequently and inconsistently reported. Jumping from a building was the leading mechanism, unlike the pattern seen in psychiatric inpatients and in the general population. Bostwick²⁴ in an informal review of the same area based on a case series of 50 psychiatric consultations from general medical/surgical wards concluded that medical and surgical patients have different risk factors, and a different profile from psychiatric patients, typically by lacking a strong personal history of suicide attempts, psychiatric diagnoses, and substance abuse.

Risk factors, and the difficulties of risk prediction. Suicide is relatively rare, making it difficult to predict even in populations with multiple risk factors and high relative risk. This conclusion, long established for outpatients and the general population, holds true for inpatients as well. Large²⁵ (AMSTAR score 9/11) in a systematic review and meta-analysis of 29 studies concluded that some specific risk factors are associated with inpatient suicide, but using the presence of multiple risk factors to identify high-risk patients produces many false positives, and misses some who will go on to commit suicide in the hospital. They concluded that reducing environmental risks and improving systems of clinical care are likely to have greater effects on suicide reduction than reliance on suicide prediction methods. The difficulties of accurate prediction for inpatients are consistent with conclusions reached by others, including Busch,²⁶ Cassells,²⁷ Paterson,²⁸ Bisconer,²⁹ and the American Psychiatric Association Practice Guideline for the Assessment and Treatment of Patients With Suicidal Behaviors.³⁰

Environmental risk reduction factors. The removal of physical or structural risk factors from the hospital environment has been frequently proposed. Lieberman³¹ and Cardell³² both report expert opinions of this topic, and make specific suggestions for environmental modifications. The modifications follow from the frequency with which hanging is used in inpatient suicide by removing both materials that could form a noose and anchor points for the noose. Most of these recommendations target inpatient psychiatric wards. Bostwick²⁴ notes the difficulties of applying these same recommendations to typically open general medical wards, which are more difficult to secure; they recommended use of nursing observation for those areas.

Experiences of Specific Hospital Programs

A number of reports described implemented program or program components, mostly guided by expert opinion or slight modifications of current practice. Few outcomes data were reported, and the quality of the studies was poor in those that did.

Sullivan³³ described a multi-component suicide reduction program implemented at Elmhurst Hospital Center in Queens, NY, a teaching hospital affiliated with Mount Sinai School of Medicine, with 117 inpatient psychiatric beds, including specialty units for Asians and Latinos. The hospital's psychiatry service implemented a suicide reduction program that included a formal assessment of suicide risk, encouraged accurate diagnosis (taking into consideration the multicultural nature of the patients treated), replaced some use of one-to-one nursing observation with "close" observation (visual observation at any distance, sometimes with a ratio of one nurse for two patients), encouraged careful use of medications, used group sessions for inpatients (on coping in the community, identifying triggers for suicidal thoughts, and listing information about resources available in a crisis), added environmental rounds to remove safety hazards, along with discharge planning and post-discharge followup. They reported a reduction in self-injurious behaviors from 1.4 per 1000 before the intervention to 0.5 per 1000 afterwards. The reported

decrease was described as associated with the component involving the formal assessment of suicide risk; unfortunately, the timing of the other components was not clearly described making it difficult to assess their role in any reduction in suicides or attempts, and in the assignment of causality to their intervention.

Other program experiences are described here more briefly. Temkin³⁴ proposed a “precaution monitoring sheet” to improve the consistency of documentation and communication within treatment team, but did not report of evaluation of it. McAuliffe³⁵ described the implementation of a program at Trillium Health Centre, Ontario, Canada, reporting on their experiences with risk assessment, staff surveys and focus groups, and training workshops; no outcomes data of inpatient suicides were reported. Ellis³⁶ reported on a program, called the Collaborative Assessment and Management of Suicidality, underway at the Menninger Clinic in Houston. The program began with the elaboration of suicide risk assessment into a comprehensive collaborative framework for patient treatment and risk reduction. The framework does not appear to be limited to inpatients. They noted the need for rigorous evaluation and planned to conduct a randomized controlled trial of their program. Ballard³⁷ proposed a framework for organizing the response of a hospital to an inpatient suicide. No evaluation of this framework was reported.

Root Cause Analyses and Related Techniques

Root cause analysis (RCA) is a structured analysis technique originally developed for human factors and systems engineering to retrospectively determine the interrelationship of component elements in causing an observed malfunction or accident. It has been adapted for use in medical and health care systems.

Dlugacz³⁸ reported on the use of the results of RCAs of 17 suicides or suicide attempts at North Shore–Long Island Jewish Health System, Great Neck, NY to design safety strategies. They developed an “inpatient suicide risk assessment and evaluation tool” (apparently for use by RNs), and an “environmental suicide risk assessment tool” used by a multidisciplinary hazard surveillance team to identify environmental risks for all facilities with some specific additional items for behavioral health units. They also developed an alcohol withdrawal protocol, as alcohol problems had been relatively common in their RCA data. They reported “no suicide attempts in the acute care setting” after implementing the alcohol withdrawal assessment protocol. Overall, there had been 6 completed suicides and 11 attempts in the interval from April 1998 to December 2001 represented in the RCAs; after making the implementations, there were no suicides and one attempt from December 2001 to December 2002. No data were reported that would allow assessment of the causal role of the other program components.

Mills³⁹⁻⁴¹ reports on the Department of Veterans Affairs (VA) experience in using RCAs to guide the development of policies and procedures. Their first study³⁹ used information from RCAs from completed suicides and parasuicidal behavior to identify the most common root causes: communication issues (including documentation of risk), policies about suicide risk assessment and treatment, patient stressors, and training or education for both staff and patients. In the second study,⁴⁰ they used VA RCA reports (presumably a superset of those in their previous article) to identify the common locations (inpatient psychiatry) and means of suicide (hanging). They also reported specific details on the anchor points and the material used as a noose, by frequency. Outside of inpatient psychiatric units, drug overdoses were also common. They made recommendations for reducing access to means through engineering interventions to remove common anchor points, and for making regular environmental rounds using a comprehensive checklist. Their environmental rounds checklist was described in detail in their

next report.⁴¹ No outcomes measures were reported. They also noted there was no evidence that the checklist was being used correctly. The target location was inpatient psychiatric units; they recommended using one-to-one observation for general medical units.

Janofsky⁴² reported on the use of Failure Mode Effects Analysis (FMEA), a structured, systematic, prospective methodology from systems engineering, to identify possible system failures, and used this analysis to redesign the communication flow related to observation of psychiatric patients. No outcome results were reported.

Wu⁴³ examined the use of RCAs in medicine generally, and noted a very wide range of skill in performing RCAs accurately, a lack of best practices in reporting and followup, and the absence of peer-reviewed evidence of the effectiveness of RCAs or their cost-benefits tradeoffs.

Observation of At-Risk Patients by Nursing Staff

One important area not frequently mentioned in some reviews is the use of nursing observation. Nursing observation is regularly invoked for patients at risk of suicide (as well as those with risks for violence, elopement, or falls). The practice varies considerably on multiple dimensions. The intensity of the observation can range from intermittent through continuous, and at specified distances from the at-risk patient. Observation also varies in who can initiate it, whether by psychiatrists, psychologists, or nursing staff. There are also differences in the degree of professional training needed to work as an observer, ranging from experienced psychiatric nurses, thorough lower levels of nursing training, other staff, volunteers, or security personnel. The terminology for the practice itself varies, being referred to constant observation, continuous observation, enhanced observation, special observation, constant special observation, and suicide precautions; all of these will be referred to here as observation status. Not considered are the effects of nursing observation on staff morale, patients' perceptions of caring, or the relationship between staff and patients, although it would be expected that these could have second-order effects on patient engagement in treatment and patient safety.

A 2006 Cochrane Systematic Review of non-pharmacological methods for the containment of unsafe behavior found no evidence supported by any randomized controlled trials⁴⁴ (AMSTAR score 7/7). A similar conclusion were reached by Manna⁴⁵ (AMSTAR score 5/10).

Dodds⁴⁶ reported an observational study with a before/after design at an inpatient psychiatric ward in the UK, in which control-oriented formal observation of at-risk patients was replaced by a care-oriented interventions on both an individual and group basis. They reported a two-thirds decline in self-harm episodes in the following year, compared with the year before the intervention. There was one inpatient suicide in the year before, and two the year after, both of the latter while the patients were off the ward on leave. There were staffing changes and changes in the size and demographics of the inpatients during the implementation of the program.

Bowers⁴⁷ reported a survey of 128 psychiatric wards in the UK, finding no relationship between the use of constant special observation and self-harm incidents, but an inverse relationship for intermittent observation: greater use of intermittent observation was associated with lower self-harm rates. This was an observational study, and causality cannot be inferred.

Stewart⁴⁸ reported a longitudinal analysis of 16 wards at three London hospitals. Regression modeling showed no statistical relation between the use of constant special observation (CSO), when the staff person was either within reach of or in sight of the patient, and self-harm incidents. No suicides were recorded. This was also an observational study and subject to the same weaknesses in inference of causality. They noted a wide variation in the profiles of CSO

usage across time, wards, and hospitals, perhaps driven by idiosyncratic differences in staff preferences for or against the use of CSO.

Bowers et al. in their literature review¹⁵ noted that suicide rates showed a mixed association with the presence of nursing observation (at different levels of intensity) in force at the time of the suicide. The cautions about inference from observational studies apply here.

Because the observer cannot be simultaneously engaged in other activities, use of nursing observation can be expensive. More details about cost and the implementation of observation programs at one Massachusetts hospital are reported by Harding.⁴⁹

Most other articles note the lack of evidence that constant observation is efficacious. Issues such as the quality or therapeutic effect of the observer-patient relationship have not been addressed here, but common sense suggests they might vary widely, and have therapeutic or counter-therapeutic effects, depending on the kind of interpersonal relationship between the observer and the patient. Cutcliffe¹ noted that suicides have occurred while the patient was on observation status.

Alternatives to constant observation were explored by Cox,⁵⁰ who proposed an alternative nurse-team framework, with greater nurse autonomy and greater engagement with the patient, along with the use of intermittent observation. These proposals have not been formally empirically tested.

Jayaram⁵¹ reported an informal survey of the use of “15-minute checks” (observation of the patient at least once every 15 minutes), which showed considerable variation in the use of this practice. No outcomes data were reported.

What Have We Learned About Practices for Reducing Inpatient Suicide?

Patients at-risk for suicide are frequently hospitalized, but suicides can be completed by inpatients on psychiatric, general medical, and surgical wards. Risk factors vary across these groups, as do the available mechanisms, typically by hanging in behavioral health units, by jumping or overdose in medical/surgical units. Risk factors are likely to be higher and involve other means in patients for predicting risk suffer from unacceptably high error rates, falsely predicting suicide in those who do not go on to commit it, and not predicting suicide in some who do.

Most existing suicide reduction programs have not been formally or carefully evaluated. Means reduction through careful periodic inspection and reengineering of the hospital ward's physical structure has been implemented, often based on results of root cause analyses of suicides and suicide attempts. These programs have clear face validity, and are unlikely to elevate risk. However, no controlled trials or high quality observational studies have been performed so the magnitude of any risk-moderating effects is not known, limiting the ability to make strong policy recommendations, or to develop cost-benefit analyses that could guide the deployment of staff and capital resources.

Using staff to observe at-risk patients is a frequently used suicide prevention practice, but there is no evidence from controlled trials showing the magnitude or even the direction of its effect. Several observational studies have shown that the intensity of nursing observation is not associated with reduction in self-harm episodes, but these did not control for the confounding effect of the severity of the patients' suicidality, which would be expected to both increase their risk of suicide and increase the frequency with which nursing observation would be invoked for their protection. Without controlled experiments, true causality cannot be inferred, and it remains

uncertain if nursing observation raises, lowers, or has no effect on the rates of suicide and self-harm for any given level of suicide risk. The psychological effects of nursing observation on both staff and patients are not the focus of this review; however, these might be expected to have second-order effects, including forging risk-lowering relationships between the at-risk patient and a staff person or, conversely, raising risk by interfering with patient privacy and autonomy, and increasing patient confinement and alienation.

What Methods Have Been Used To Improve Practices for Reducing Inpatient Suicide?

Because there is little empirical evidence to support the suicide prevention practices in current use, recommendations for improving practice have focused on the need for high quality research⁴⁴ including some specifics for making the results useful to both clinicians and policymakers. Although data on completed suicides might seem to be the most valid outcome measure, their use has been questioned because of problems in tracking and sampling, and the statistical noise in the low rates, leading to instability in the measurements.⁵² Future work will likely refer to structure or process measures of quality,⁵³ in addition to, or in lieu of, hard outcomes data. It is expected that continued efforts will necessitate periodic reassessment of this topic area for consideration of review.

Conclusions and Comment

Current practice for the reduction of inpatient suicides is supported by tradition, expert opinion, very limited observational studies of low quality, and the face validity of some of the interventions.

The use of staff to observe at-risk patients is frequently employed, but there is no evidence from controlled trials showing the magnitude or even the direction of its effect.

Recommendations for high quality research in this area, including some specifics for making the results useful to both clinicians and policymakers, have been proposed.⁴⁴ Although data on completed suicides might seem to be the most valid outcome measure, their use has been questioned because of problems in tracking and sampling, and the statistical noise in the low rates, leading to instability in the measurements.⁵² Future work will likely refer to structure or process measures of quality,⁵³ in addition to or in lieu of hard outcomes data. It is expected that continued efforts will necessitate a periodic reassessment of this topic area for consideration of review. A summary table is located below (Table 1).

Table 1, Chapter 26. Summary table

Scope of the Problem Targeted by the PSP (Frequency/Severity)	Strength of Evidence for Effectiveness of the PSPs	Evidence or Potential for Harmful Unintended Consequences	Estimate of Cost	Implementation Issues: How Much do We Know?/How Hard Is it?
Rare/High	Low	Low	Moderate	Little/Moderate

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